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ABSTRACT

Forecasting models for maximizing postsecondary futures and applications of the model are considered. The forecasting of broad human futures has many parallels to human futures in the field of medical prognosis. The concept of "exasperated negative" is used to refer to the suppression of critical information about a negative future with the consequences being a greatly increased destructive impact on the individual and the individual's investment in that negative future. An application of this forecasting approach is the use of profile groupings of high school graduates to characterize their probabilities for success. An extensive historical data base contains such items as the characteristics and track records of the profile groups, regions, programs, and institutions. The model brings together the supply and demand sides for plans and simulates the successful outcomes. Negative futures are then resimulated and if the personal motivational index supports a second choice plan, reallocation is achieved. Application of the maximizer approach was undertaken in four Manitoba high schools. Students were allowed to play through the planning experience of 10 highly repetitive case studies. Students attempted to make decisions for their case, and the data were entered into an interactive terminal for comparison with other candidates and a simulation of the probabilities of achieving one of the successful plan outcomes. Group discussion was also integrated into the process. Implications of the project are considered. (SW)

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FORECASTING AND MAXIMIZING POST-SECONDARY FUTURES:

Dilemmas Over Negative Futures And Their Hidden Costs

by

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Director

DATA FOR DECISION MAKING

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FORECASTING AND MAXIMIZING POST-SECONDARY FUTURES:

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Issues: Do people as individuals in a society stressing pursuit of both personal and community objectives have a right to be informed of a negative Post-Secondary future once his or her choice of plans place them on paths where hundreds, even thousands, have and will become casualties?

Are some Post-Secondary programs generating negative futures with hidden costs which may exceed the total program costs? If so, should program accountability reflect and monitor both positive and negative program futures?

Introduction: Information Societies of the 1980s are rapidly approaching a state-of-the-art in methodologies, technologies and data availability, so that very comprehensive models can and have been built to forecast the outcomes of Post-Secondary plans with high degrees of certainty. With the successful validation of these forecasting models comes a serious questioning of our morals and values. What should we do about forecasts of thousands of negative futures and their casualties?

The answer to this last question is all too frequently to do nothing! At first there is denial, then avoidance, attempts to define away the problem, and when this doesn't work the final move is political, to destroy the science and its comprehensive models. The author speaks from a background of nine years of first hand observation of the educational process as the Chairman of a Post-Secondary Research Reference Committee in Canada charged with the development of his original forecasting design.

Following two years of successful Post-Secondary enrollment forecasts, with errors of only 0.2 percent and 1.8 percent respectively, and completion of the Validation Study, this new methodology was undertaken in part by the Canadian Provinces of British Columbia and Saskatchewan and by the Federal Government's Statistic Canada. The Post-Secondary Research Reference Committee of Manitoba undertook the development of the PDEM-II a forecasting model with a three year view of the future. This model was completed and operationalized for the in-house staff of the Manitoba Department of Education in 1978. Although very little has been accomplished since the transfer of these models to the Department of Education, this may be a reflection of budgetary problems. It is hoped that concerned people here and in other Information Societies will build upon this very fruitful beginning.

Exposure Analogy:

The forecasting of Post-Secondary futures has many parallels to human futures in the field of medicine. Perhaps the reader is acquainted with some medical futures as probabilities applied to diseases such as cancer. Probabilities are presented such as ninety-five percent survival for an operation and seventy-five percent survival for an age-sex group beyond five years. Given this critical information plus other relevant data on the patient's condition, both doctor and patient can accept one treatment or explore another.

The parallel is furthered by the recognition that not all patients are given critical information at the most appropriate time to support their decision making.

For example, some future patients unknowingly walk paths that expose them to x-rays, chemicals, herbicides etc.....and many years later face assorted illnesses: skin cancer, headaches, numbness, birth defects and early death. If the probable consequences of these exposures are known at the time of the exposure or before, we have a situation closely paralleling the dilemmas over Post-Secondary negative futures which is the focus of this report.

The exposure analogy is illustrated in the case of Edmund Juteau, a medic in the Vietnam War, who was exposed to the herbicide, Agent Orange. Just before his death from cancer of the lymph nodes, believed a result of the exposure ten years earlier, he commented on the suppression of the critical information about his negative future:

"I died in Vietnam, but the Government forgot to tell me."

Exasperated Negative Futures:*

For Edmund Juteau the exasperated negative future was not the personal calamity of exposure to Agent Orange but the suppression of this information. This suppression of information caused him to continue for years to waste his limited time and energies on plans and paths with no realistic chance of fulfillment.

In Post-Secondary the problem of the exasperated negative appears to be a reflection of Western Society's insistence that the individual select a program objective at a very early age and frequently without adequate decision making information. The individual finds himself or herself under the strong pressure from parents and the school system to select a career plan and support it with programs at the high school or earlier levels.

Typically the individual has invested many years and a vast amount of personal energies and resources in such preparatory program when - - often days before they are to realize a major objective - - a form letter arrives from a college or university saying:

"Thank you for your interest in _____. I am sorry to inform you that other candidates were found to be more qualified for the limited program openings."

If this negative future had been forecast one to three years earlier and this critical information suppressed, we have another example of an exasperated negative future.

Negative Dimensions:

This section of the report will attempt to give the readers some size and cost dimensions. What proportion of a high school graduating class or profile group might be facing a negative future for their Post-Secondary plans? What are some of the dimensions of costs to the individual and society?

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* Exasperated Negative Future is a term developed by the author for a very common situation disclosed in the findings of comprehensive forecasting models which start with inputs of individual plans and program quotas, and simulates both positive and negative selection outcomes. This term is defined as the suppression of critical information about a negative future with the consequences being a greatly increased destructive impact on the individual and his or her investment in that negative future.

Size:

During the nine years the author was involved in forecasting Post-Secondary enrollments a total sample of over twelve thousand individual cases were studied and followed up by Studies in 1973, 1977 and 1979. The forecasting models identified and utilized a number of profile groupings (See figure on Forecasting and Maximizing Model III) to characterize individuals and their Post-Secondary probabilities. Two of the profiles, the "Going" and the "Going Impacted"* account for most of the enrollments into higher education in Manitoba, Canada. The Going group were eligible and had all the necessary influencing variables supporting their plans. This group had a negative future outcome of about thirty percent year after year. The Going Impacted were also fully eligible but lacked some degree of support from the influencing variables and faced a high probability of one or more Impact Events. The Going Impacted encountered a negative future rate varying between fifty-five and sixty percent.

Some doubt exists as to the total numbers of individuals involved in negative futures in Manitoba, due to the large open programs most colleges and universities provide for individuals rejected by their first choice programs. For example, large flows of individuals, numbering in the thousands each year, were observed coming from their negative futures (professional programs in universities and vocational and technical programs in community colleges) and going into open Arts and Science programs. The Post-Secondary institutions and the Department of Education tend to view this as a positive future outcome, however the individual's response often reflects one of the following situations: "I hope this program will improve my chances for my first choice program," "I needed time to develop a new program plan," "It was the socially accepted thing to do," and "I had nothing else to do."

To summarize, the number involved in negative futures is obviously very large. In many human environments and in some profile groupings the negative futures which can now be forecast up to three years before the event, outnumber the positive outcomes.

Costs:

1. Psychological Costs:

The psychological costs resulting from the trauma of encountering a negative future occasionally pass quickly, more typically they take a year or so to overcome, and sometimes they last a lifetime. The pilot applications of the Future Maximizer (the author's participant simulation tool) strongly suggest that most of the psychological costs can be avoided if there is an early warning that one's Post-Secondary program is a highly probable negative future and a workable alternative is needed.

An extreme psychological cost has been observed to characterize a state of "Future Collapse".** This situation appears to be triggered by the impact, shock and surprise of an Exasperated Negative (destruction of a long standing personal plan supported by substantial personal and preprogram investments). Individuals

*"Going Impacted" is the original name given a large profile grouping emerging from the author's survey tool and its' section on "Impact Events". The importance of the both Impact Events and the Going Impacted to successful forecasting of Post-Secondary enrollments is critical. The Going Impacted are fully eligible and think they are going to fulfill their educational plans, however for many a negative future will result.

**"Future Collapse" is also a term created by the author to describe his findings.

characterizing this condition have loss a view of the future (when asked to describe the future "I would like to see" this survey item is often left blank), disclose a high level of uncertainty, indecision, and even paralysis of decision making. Eventually there may be internalization of personal failure, a loss of motivation and a collapse of self image to levels markedly below demonstrated potential.

2. Impact Events, Influences and Circumstances:*

In March of 1977 Dr. Dale Beckman of the University of Manitoba completed a major study for the Post-Secondary Research Reference Committee of Manitoba entitled: A Follow-Up Study of Grade Twelve Students Qualified and Expressing Plans to Undertake Post-Secondary Education Who Did Not Attend. In terms of the current report's objective Dr. Beckman's research question might be re-stated as follows:

> Are there Impact Events, Influences and Circumstances which product sharp changes in plans and negative Post-Secondary futures for students who are academically eligible, who have taken preparatory programs (often three years of preparatory programs in high school) and who planned to attend Post-Secondary when interviewed in November of their senior year in high school?

a.) Academic Overload:

Until the early 1960s a grade eleven education was considered the normal termination point for about ninety percent of the students in Manitoban high schools. Grade twelve was only for the ten percent going on to university and course load and material content supported this outcome. For some educators the senior year and its'Post-Secondary preparatory program is the point of separation and frequent observations by students suggest a shocking increase in their academic loads at this time. The second most frequent reason given by students for a change in their Post-Secondary plans between November and June of their senior year was: "Wanted to take a break from school for a while."

b.) Uncertainty:

The number one reason for a change in Post-Secondary plans between November and June of the senior year, no doubt, reflects the impact of the increased academic load of this period as well as the nearing decision point and the availability of other opportunities and non-continuing influences. This reason reflects a growing uncertainty, a decision to stay out of Post-Secondary for a while (53.7 percent) and a rejection of the original plan by June (Never really expected to go) by twenty-eight percent.

c.) Obtained a Good Job:

The Impact Event: "Offered a good paying job for all next year" has long been recognized as a major impact capable of producing a sharp change in Post-Secondary plans. This was the third most frequent explanation and appears to find support from the fourth and fifth reasons also:

No. 3 "Obtained a good job"
No. 4 "Wanted some experience first"
No. 5 "Wanted to buy other things (eg. car) first"

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* The central importance of the "Impact Events, Influences and Circumstances" to the successful forecasting of Post-Secondary enrollment in time of changing values was first discovered by Dr. Hoffman while he was a Research Associate doing the conceptual design for a project at the Ontario Institute For Studies in Education in Toronto, Canada. A short time later he was invited to come to Manitoba and undertake an operational application of his new methodology when their traditional forecasting faultered at a critical time of high growth and expansion in Post-Secondary. It has been estimated that successful forecasts and conviencing power and internal consistency of the new methodology has saved the Province of Manitoba over $ 100,000,000. between 1972 to 1980.

3. Disproportionate Impact Proneness:

Dr. Beckman's study of the eligible non-participant who plan to attend Post-Secondary but did not, disclose a strong parallel of profiles of this group and the non-going students generally. Both groups come from families where the father has less than high school achievements, family size is larger than the "going" group (greater than two children), and there is a disportionate rural-agricultural and blue-collar father's occupation present. The only major difference between the two groups is the eligible non-participants have higher grades and could have easily entered Post-Secondary.

While Dr. Beckman's study could find little overt parental influence against attending Post-Secondary for the eligible non-participants, he concluded there may be little encouragement. The eligible non-participant is impacted with high levels of uncertainty, they are often tired of the heavy academic load by the end of their senior year and are attracted to a full time job and the opportunities to buy things such as a car and gain new experiences. Both the "Going" and the "Going Impacted" students have the academic potential and the program preparation for Post-Secondary. For the Going Impacted, according to Dr. Beckman:

> "Post-Secondary education may not be a part of the normal set of life expectations; hence, there is not enough motivating force to overcome the factors pulling against continuance to post-secondary education".[1]

A final observation is enlightening on the non-participant Going Impacted who had a strong majority favoring enrollment in a university in November of their senior year in high school. Thirty-six percent of this group were quite optimistic about some day going on to Post-Secondary but not where originally planned. By a proportion of almost four to one they now selected the community college offering over the university.

4. Cost to Lifetime Income:

The difference in lifetime incomes of those who are admitted to the professional and highly skilled positions in society and those of equal eligibility who suffer a negative future can be very substantial. Looking beyond those who suffered a loss of several years in program preparation, years enrolled in Post-Secondary "open program" instead of their selected program, and those who delayed or terminated their education, it is appropriate to focus on those who suffer "future collapse" and may never leave the unskilled or semi-skilled ranks. As indicated in the previous sections, the big losers with negative futures are the "Going Impacted" with over half of their numbers becoming casualties. However, even the "Going" group experiences a substantial thirty percent impact and change in their plans.

At this point in time, follow-up studies and the existing Validation Studies[2] conducted in the Manitoba environment and utilizing the author's original data items either lack the duration needed or the methodology to suggest anything more than a

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[1] Beckman, D., A Follow-Up Study of Grade Twelve Students Qualified and Expressing Plans to Undertake Post-Secondary Education Who Did Not Attend, Post-Secondary Research Reference Committee of Manitoba, March 1977, page 64.

[2] The PDEM Data Bases have been utilized for three follow-up studies (1972 and 1973, 1977 and 1979). The last follow-up was an in-house government generated document and contained too many methodological problems to be a source for this report.

lifetime income trend. What proportion of each high school graduating class were eligible and achieved their first choice Post-Secondary program and either their first or second choice occupational "Expectation" or "Aspirations" (If I could I'd become a _____)? The original sample of three thousand 1971 Grade Twelve Students is now a decade old and cost to lifetime income should begin to emerge. It is suggested by the author that a lifetime income differential between these positive Post-Secondary futures and those suffering "future collapse" will be between $ 300,000 to $ 600,000 in current Canadian dollars.

If the above assumption is reasonable and if we can assume further that approximately twenty percent of each high school graduating class suffer "future collapse" in a community of one million - - the annual cost of this exercize may exceed one billion dollars.

5. Program Costs of Negative Futures:

With the insights into the future of human plans provided by the successful forecasting models comes the identification of both Secondary and Post-Secondary program costs related to poor allocation of resources and failure to achieve objectives. In the Manitoba environment it was estimated that an annual cost of about ten million dollars was involved. The author chaired the Outcomes Committee of Manitoba for a number of years and would stress the great need to carefully assess the nature of the local educational system, to define outcome criteria, to assure a balanced evaluation, to provide a solid methodology and to seek professional researchers before approaching this complex subject. A simplistic approach can grossly mislead decision makers as follows:

a.) Negative Futures and Early Selection:

The levels of negative futures in a society at the Post-Secondary often reflects educational philosophies which allows only replacement needs of talent to reach higher education. For example, selection at the Elementary levels using special public and private schools, special programs etc. . .may effectively plow-under talent before it can clearly demonstrate its' potentials (The Children's Palace of India selects about one child in eight thousand). Where the selection process is occurring in a society at the beginning, middle or end of the educational process, it is critical to understand and explain the levels of negative futures discovered.

b.) Accountability and Hidden and Transferred Costs:

A careful study, validation and evaluation of the local educational process is often needed to understand how negative futures may be generated by one program but appear (if ever) associated with another program. Professional and highly technical programs in universities and community colleges were disclosed to be a major producer of hidden negative futures by their insistance on selecting candidates only at the latest possible points in preparation. In some instances no candidates were selected, and ratios of successful to unsuccessful ranged from 1::50, 1::10 to a typical 1::5. The important question for the decision maker in this situation should be: Did the candidates encountering a negative future find a second or third choice program reflecting their years of preparation? If not, is this too high a price to pay for support of traditional selection processes?

Gamemanship in the transferring of negative future costs may also occur due to poorly trained, non-professional researchers and their use of simplistic methods. For example, many of the individuals encountering a negative future for their first choice professional or technical program were observed entering Arts and Science Programs. When these same individuals were eventually contacted by researchers for

outcome evaluation, they frequently expressed dissatisfactions and disappointment in the match-up of their preparation to their current program and to the eventual occupational outcomes. It is, needless to say, very important to recognize such transfers of negative futures with adequate methodologies which start when students make their choice of preparatory programs (in Canada and the United States at about the ninth or tenth grade levels). Finally, conduct of outcome studies should be done by professionals and when this is not possible, it should be guided and evaluated at each step by a committee of university researchers.

6. Cost of Competition:

Some societies try to support a myth of free and open competition for all individuals with demonstrated eligibility and potentials to achieve the limited pathways to professional and highly skilled occupations. The comprehensive forecasting model, however, indicates that the competition was highly weighted towards candidates who were able to enjoy factors which had little or nothing to do with their potentials. For example, candidates coming from rural environments generally did only half as well as their urban competitors. The selection of preparatory school could make a major difference between emerging from an institution with no record of successful candidates to the other extreme, a private school associated with winners about eighty percent of the time. Family background, numbers of children in the family, and the Post-Secondary outcomes of older brothers and sisters appear as important determinates. The Parent's educational achievements and the occupational-economic status are long established determinates. Peer associations and values are often reflections of geography, housing and location of employment and tended to work against a Post-Secondary outcome when these associations were strong. Finally, a number of impact events awaited substantial numbers of the student population each year and produce a very uneven impact on talented individuals. Both the character of the Impact event and the nature of the student-parent response are important determinants of the outcomes and rarely relate to the potential of the student to succeed in their Post-Secondary program.

7. Information Creditability:

In many environments education is a highly political part of the social-economic community. Civil servants responsible for collection of educational data, educational research and maintainance of the system with orderly decision-making tend towards a non-creative, even psuedo-intellectual orientation. The creative professional quickly discovers this is a world where many answers are politically communicated to the civil servants who then seek to find a methodology supportive of the desired outcomes.

Such an environment may standardize its reporting of educational data to a few "bare bones" of simplistic numbers, high school graduates, Post-Secondary enrollments by program and level, Graduates and degrees granted, numbers employed in fields related to educational program and some assessment of the labor market replacement and growth trends. From these standardized educational reports simplistic decisions on very complex systems are implemented. The mixed success of such decision making efforts usually vary directly with the time span (typically annually) and the change impacting the system. The failure of simplistic data collection and resultant decision making often finds educators unwittingly producing administrative surprises and problems and even undermining their own programs and policies.

Considering the student's level of decision making, these standardized reports are far from being adequate. However, at this point in time, most students and their parents have little or no idea of what is possible in planning data and tools to maximize their objectives. Therefore, there is little pressure to change or to challenge the creditability of the information system. Some observers might even say there is an anti-informed student decision making elite seeking to keep an advantage for their children.

FORECASTING AND MAXIMIZING MODEL III (FMM - III)

by
Benjamin P. Hoffman

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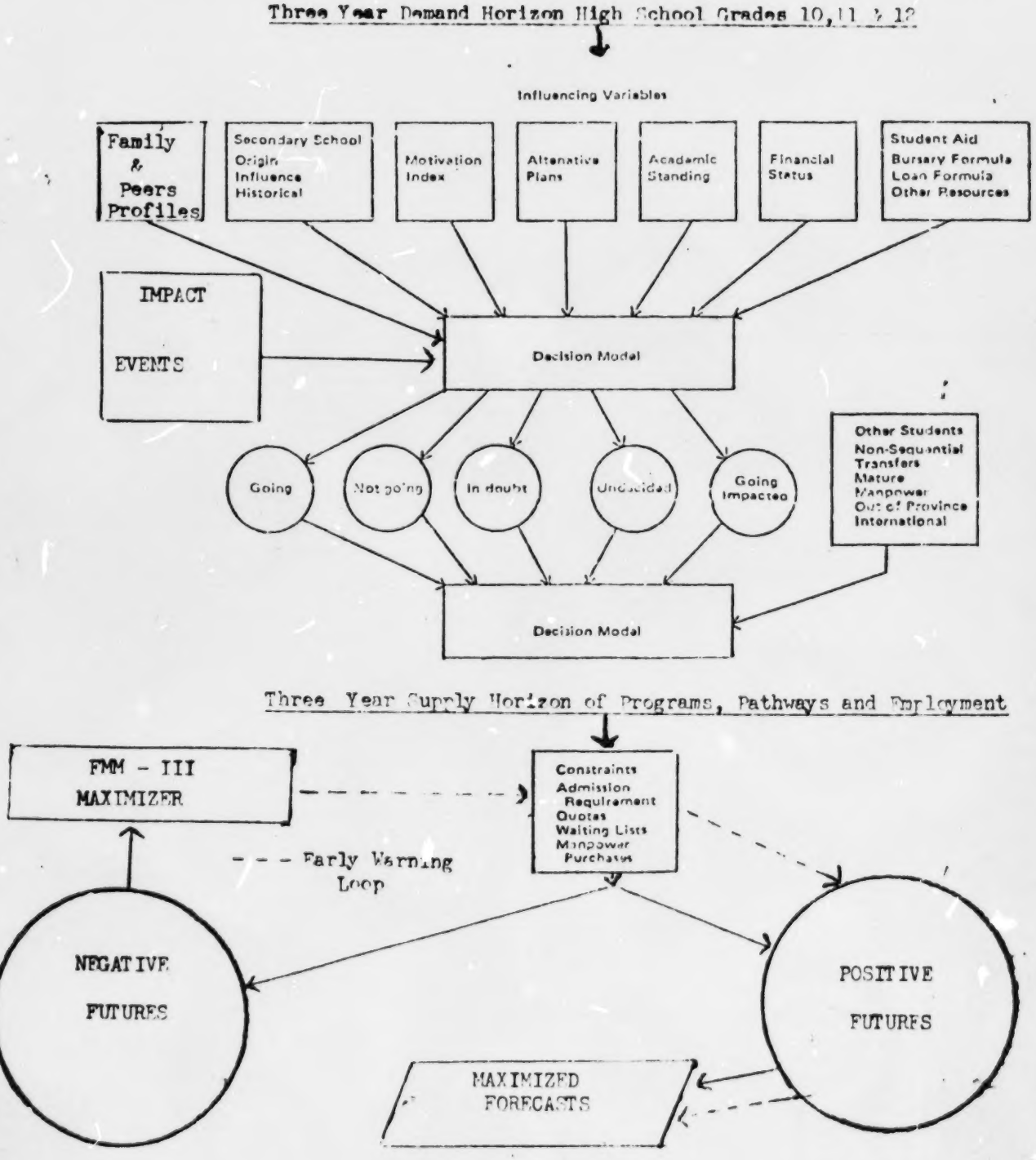

FUTURE MAXIMIZER:

What would Edmund Juteau have done if he had known the consequences of Agent Orange before he was exposed? If he could have looked into the future shortly after being exposed, how would he have used his time differently? There are no answers to these two questions because the critical information was not available and the need for alternative planning did not appear.

How will individuals undertaking the planning of their lives react to receiving a warning of a probable negative future long before it becomes a reality? Instead of receiving an impersonal letter after years of study and preparation, the individual planner might have observed a flashing signal on a computer display in home or school at the ninth year or so of schooling:

HIGHLY PROBABLE NEGATIVE FUTURE FOR THIS POST-SECONDARY PLAN

Explanation:

1. Supply and Demand Simulation for this Program Indicates Limited Openings
2. Personal Background Indicates Low Probability of Selection
3. Selection of Preparatory School and Program Low Success Rate.

The Maximizer came at the end of an innovative research chain. Therefore, a brief look at the foundation links of this chain, the comprehensive forecasting models and the Maximizer's developmental questions are in order before we explore its' applications.

The Forecasting Models:

Two comprehensive forecasting models with a one and three year view of the future were developed, validated and made operational under the guidance of the Post-Secondary Research Reference Committee of Manitoba during the period 1972 to 1978. The model's conceptual design are the original work of the author and were operationalized by Dr. T. Major and Dr. D. Beckman.

Future assessment on the supply side for plans required, a one to three year report on the availability of programs and pathways, any changes in selection criteria and prospects for expansion and contraction. An extensive historical data base contains such items as the characteristics and track records of the profile groups, regions, programs and institutions (high schools, colleges and universities). Finally, the model brings together the supply and demand sides for plans and simulates the successful outcomes in phase one. In phase two the negative futures are resimulated and if the personal "motivational index" supports a second choice plan, reallocation is achieved.

Maximizer's Development Questions:

How do you economically deliver critical information on individual plans to a population of over one hundred thousand? The author's answer was to design a delivery vehicle as an essential sub-system of the total comprehensive forecasting model. The outcome of such a marriage would be substantial economies and benefits in the form of complementary use of the same data base and many of its programs, the shortening of the turn-a-round time for up-dating, and a marked increase in the forecasting power and stability with the reduction of the uncertainties of the negative futures. The estimated cost per capita for the use of the Maximizer was two dollars per year in 1974.

Should the use of the delivery vehicle be satisfied with an early warning of a negative future or should it attempt to tap the full power and critical information stores of the forecasting model - - to identify workable future alternatives and to maximize probabilities for success? In the median and longer run it did not appear in the interests of individuals, institutions or governments to perpetuate the uncertainty and instability by only giving an early warning of a negative future (which would very likely be replaced by another negative future). It appeared in the interest of most parties to cut short the often long, frustrating, trial and error process of identifying a workable plan.

MAXIMIZER APPLICATION:

With the successful forecasts and validation of the first two years of the forecasting model, the author began explorations for a vehicle which could effectively communicate critical information and planning techniques needed to avoid the very high levels of negative futures in the system. In the Spring of 1974 the Maximizer was introduced by means of a "safe environment" in four Manitoba High Schools. The "safe environment" allowed the student to play through the planning experience of ten highly repetitive case studies drawn directly for the findings of the forecasting model. Student attempted to make decisions for their case, given a short scenario of life history, and a basic planning sheet. The data were then entered into the interactive terminal for a comparison with all other candidates and a simulation of the probabilities of achieving one of the successful plan outcomes. Very frequently the results of the safe environment were a negative future and then, the students were faced with a new set of decisions on what to do next. The idea of the game was to find, eventually, a workable plan which would satisfy the interests of the case person.

Evaluation of the safe environment and it's case study approach was very satisfactory. Within the first ninety minute session all but a few students (about twenty percent) had achieved confidence with the planning technique and the use of the interactive terminal. The remaining students achieved effective use of the approach during the second group session. The signal for a successful graduation was an eagerness to shift from the safe environment to a trial run of personal data in the Maximizer.

Another technique used during the decision making for the ten case studies was "stop action" followed by group discussion. This technique was applied when it appeared that student decisions were following paths unlikely to achieve workable futures. Stop-action followed by discussion frequently revealed high degrees of isolation, broken communications and a sense of personal tragedy facing the students. For example, family money problems are very inhibiting. While the students were told the case studies were highly repetitive situations, this fact did not hit home until the action was stopped and discussion opened up the commonality of the problem areas.

Evaluation of the stop action - discussion technique was most positive - - with the results being an almost visible lifting of burdens of isolation and ignorance. Failure of ones life-plan, even after years of preparation, was no longer seen as a personal failure surrounded by shame, retreat and even future collapse. When a "no win" situation faced a case study and, in fact, also the players personal life, stop action and discussion quickly stripped it of its' characteristics which were so destructive of the individual. With the Maximizer's contribution of a supply of critical information and workable paths, positive futures usually resulted.

The Maximizer was applied using a "Pre and Post" evaluation approach. Controlled and experimental groups were randomly selected at each of the four high schools prior to the application. A short test of knowledge and planning techniques was administered to the total group both before and after the Maximizer application and independently evaluated by the Department of Education.

Evaluation of the "Pre and Post" tests indicated that experience with the Maximizer application had significantly improved the student's knowledge and planning capabilities. The major limitation of this evaluation was it's short term nature. The long range benefits of the Maximizer to significantly reduce negative futures was never followed up!

The final overall evaluation of the Maximizer would make two points: First, the acceptance of the Maximizer in the four high schools was very positive. The students were eager to learn in the safe environment and to make the shift to the real world. Not infrequently students would appear at the door with friends asking if they could also use the Maximizer after the session. The counselors welcomed the Maximizer and recognized that it contained critical information they, also, had been denied. Inquires were received from the participating schools for a return visit and to borrow the Maximizer for several years following it's application. Second, the Maximizer is dealing with extremely important matters, the lifetime plans of individuals. The point at which the players first shift from the safe environment to the real world with a Maximizer application of their personal data should have a professional planning counselor in attendance. A few students, perhaps five percent, are so attached to their future plans that a negative future can come as a substantial personal shock. The lessons of the case studies, the discussion, the planning sheet alternatives and the Maximizer explanation and options can be forgotten with the impact of a negative future. Like a vaccination, for a few there is a temporary discomfort in the sting of the early warning - - but it is nothing compared to the destructiveness of the disease of an exasperated negative future.

Conclusion:

The successful development, implementation and validation of a comprehensive forecasting model for Post-Secondary in Manitoba, Canada during the 1970s provide Social Scientists with a rare opportunity to gain detailed insights and understanding of the effectiveness of human planning in a complex environment. A number of conclusions are important to the reader in terms of the continued development of this methodology and its forecasting and maximizing potentials as follows:

1. The successful forecasting and maximizing tools represent a breakthrough in man's educational decision making and planning. In effect, the whole system and its one hundred thousand or so decision makers, are encompassed by the model and its' three year forecast of the future. In this highly complex situation, the individual can now find himself, and indeed, seek to maximize the effectiveness of his plans. Personal isolation, miscalculations and negative futures, an inadequate view of the Post-Secondary options can now be markedly reduced.

2. Responding to the first "Issue" presented in the introduction of this report, the Social Scientist as a compassionate human being is often faced with the dilemma of doing only the task assigned and not addressing to the human casualities discovered to be associated with that task. The issue here is not simply "Do people have a right to be informed of their negative futures in time to avoid them?" but also, "Is the society in which they live prepared to accept and to adjust to the changes to its' structure resulting from the avoidance of

negative futures?" One example of this adjustment reflects the fear in many societies of a large population of highly talented young people who are well-educated and trained, but cannot find appropriate positions in that society. The negative Post-Secondary futures cut down the supply of talent to the appropriate replacement levels and as the game is currently set up, most unsuccessful participants believe it was by open and fair competition. In effect, the negative future is socially defined as a personal failure and the pressure on the information system to change, is minimized.

3. A conclusion following from the above example would observe that the forecasting methodology is of value in most societies but its spin-off, the Maximizer must be introduced with appropriate appreciation for its potential impact beyond the "human rights to avoid negative futures". A scenario for a society where the Maximizer would be welcomed might be: A world center for communication, micro-electronic technology, international trade and political influence. In effect, an environment responsive to high levels of change for survival and willing to accept the risks of developing its' talent potential for Post-Secondary. Surplus, highly educated talent might be viewed as a major means of exporting influence and meeting the needs of the multi-national organizations. This Scenario suggests that some static societies may not be able to risk the according of human rights to maximize one's future.

4. The second "Issue" posed in the introduction is one of accountability and gamemanship sometimes associated with Post-Secondary program selection, admission and outcome reporting. Traditional ways of program selection of candidates may be producing costs at both the preparator program levels and personal levels, which would seriously challenge such procedures. These procedural costs are then compounded by the frequent failure of Outcome Studies to encompass the original student plans and their preparatory programs which encountered negative futures. The assignment of costs and dissatisfaction to programs and institutions accepting negative future casualties is a very questionable accountability methodology.

5. A final conclusion would reflect the significance of this research methodology to the broad area of human plans and outcomes being shaped by our social, economic and political environments. Extensive data basis are being developed in fields such as medicine, marketing, social insurance, census studies, transportation, recreation . . . and it is time to link these isolated research and data gathering efforts into wholistic models. As such wholistic research progresses the findings disclosed may produce more discomfort than solutions. This discomfort is often the initial price paid when tradition, myth and folklore are being swept away by new levels of understanding and control over our futures.

REFERENCES

Beckman, D. A Follow-Up Study of Grade Twelve Students Qualified and Expressing Plans for Post-Secondary Who Did Not Attend, Reference Committee, 65 pp., 1977.

Hoffman, B. The Maximized Plan, Educational Resources Information Center (ERIC), 7 pages, 1981.

Hoffman, B. The Ten Year Report: Innovations and Off-Springs of Forecasts in Human Futures, ERIC, 15 pages, 1981.

Hoffman, B. Impact Events and the Maximizing of Educational and Employment Futures, (ERIC), 6 pages, 1981.

Hoffman, B. Direct and Off-Spring Operational Research PDEM, Inventory of Research Into Higher Education in Canada, AUCC, Ottawa, 4 pages, 1975.

Hoffman, B. "Student Decisions On Post-Secondary: The Manitoba Experience", Educational Planning, Vol. 1, No. 2, pages 80 to 92, 1974.

Hoffman, B. The First Six Months: PDEM Innovations in Forecasting Higher Education, January to July 1972, ERIC, 6 pages.

Hoffman, B. Post-Secondary Demand Study: Proposed Methodology, Synopsis of presentation University of Winnipeg Board Room, December 9, 1971, ERIC, 2 pages.

Major, T. PDEM-II A Quantitative Model for Forecasting Post-Secondary Demand and Enrollment, 1977 Volume I, Methodological Description, Volume II (Dr. Dale Beckman) Survey Procedures, Volume III, Systems and Programs, and Volume IV, Data Base Files and Codes.

Major, T. PDEM-I, A Quantitative Model for Forecasting Post-Secondary Demand and Enrollment, Research Reference Committee of Manitoba, Volume 4, 144 pages.

Major, T. The Profile of 1972, 1973 and 1974, Grade Twelve Students in Manitoba, Research Reference Committee of Manitoba, three volumes.

Major, T. Validation of the Results of the 1972 and 1973 Grade Twelve Student Profiles, Research Reference Committee of Manitoba, 77 pages, 1974.

Staff and Department Personnel, Profiles, Aspirations, Plans, Data Base Guides, Financial Problems, Comparative Decision Groups, Barriers to Post-Secondary, etc. . . . . (using the PDEM methodology, tools and Data Base originated and supervised by Beckman, Hoffman and Majors.)

Saskatchewan Department of Continuing Education, Plans of Graduating Grade Twelve Students for the Fall 1973, 1974 and 1975.

Wennevold, H. N. Plans and Profile Characteristics of Grade 12 Students in British Columbia, 1975 and 1976. Post-Secondary Forecasting Committee.

_____, The Post-Secondary Research Reference Committee: Five Year Report, 1973 to 1978, University Grants Commission.

_____, Exploration of Outcome Indicator for Post-Secondary Education, Report of the Committee on Outcome Indicators, University Grants Commission, August 1977.